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THE PLACE OF PSYCHOLOGY IN THE CLASSIFICATION OF THE SCIENCES.¹

It seems to me, though I only give my views with some diffidence, that the study of psychology properly belongs to the group of 'natural sciences,' and requires to be carefully distinguished from two branches of thought which may fairly be called philosophical, viz., the abstract or exact philosophical group constituted by exact logic and pure rational mathematics² on the one side, and the concrete philosophical group of the *Geisteswissenschaften* (ethics, the philosophical interpretation of history, art, religion, etc.) on the other. In fact, in my own opinion, the consideration which should make a respectable acquaintance with the methods of scientific psychology an indispensable part of the philosopher's mental outfit is that, owing to the relative recency of the separation between psychology and general philosophy, it is at present easier for him to get a first-hand acquaintance with the principal methods and working postulates of experimental science in the psychological than in the physical or chemical laboratory. That some degree of first-hand knowledge, both of the kind of precautions which have to be complied with in experimentation, and of the mathematical methods by which a series of isolated observations may be made to yield a trustworthy general formula (methods of interpretation, approximation, correction for probable error, interpretation of averages, etc.), ought to be acquired by every student of the critical problems of the theory of cognition is, I take it, hardly likely to be denied in the present state of philosophical thought; and, as I say, the psychological laboratory seems to be the most suitable place for its acquisition with a minimum expenditure of time and mental energy. (If I may be allowed to digress for a moment in order to make a remark which may possibly be interesting to

¹ Read before the American Philosophical Association, at Cambridge.

² This would embrace at least arithmetic and the whole theory of assemblages, finite and transfinite. Whether it would include geometry depends upon our view as to the disputed question whether the principles of geometry include extra-logical "existence-theorems" or not.

those who, like myself, have regularly to deliver courses of lectures on elementary logic, I have always held that 'inductive' logic can only be profitably taught in close connection with simple laboratory practice, and it is precisely the convenience with which this practice can be supplied in the form of psychological class experiments that, to my mind, justifies the system of McGill and some other universities where a half-year's course in psychology precedes a student's first introduction to logic.)

To return to our immediate subject. What, in my view, distinguishes the natural or empirical sciences from both groups of what I have called philosophical studies, is the presence among their data of empirical existence-theorems. By an *empirical* existence-theorem I mean the assertion of the existence at a particular moment of time of a fact which is believed in, in the last resort, simply on the testimony of immediate apprehension. Thus empirical existence-theorems, in the sense in which I am using the term, are identical, or nearly so, with the class of assertions which Leibniz calls "truths of fact." Their distinguishing peculiarity is that they are neither simply seen to be self-evidently true, as is the case, in my opinion at least, with the fundamental existence-theorems of logic and arithmetic, nor yet are they rigorous deductions by exact logical methods from a precisely enumerated group of premises which are themselves self-evident, as is the case with the conclusions of the different geometries, if we grant that these studies depend on no extra-logical existence-theorems. As Leibniz would put it, the denial of an empirical existence-theorem "implies no contradiction"; the theorem is believed simply because at a given moment we seem to find an example of it in our own immediate unanalyzed feeling or sensation, or infer from the utterances and gestures of others that they are finding one in theirs. In other words, an empirical existence-theorem is, from the point of view of logic, a complex existential proposition involving in its meaning a reference to a particular moment or interval of *time*. The general form of such a proposition is '*x* exists *now*,' in which the 'now' is a variable the value of which for any given assertion has to be fixed by reference to an arbitrarily assumed origin or standard

date from which our reckonings are made. (The existence-theorems of logic, on the other hand, precisely because they involve no such time-variable, are all concerned, in my opinion, with the cognition of simple self-evident truth, and the objects cognized by them constitute, to use an indispensable but shamefully degraded and misapplied term which it is high time to rescue from the sciolists, the veritable *noûmena* of philosophy.)

Now, I should maintain that all the observed and registered data upon which our psychological inferences are based, and all the conclusions which can be legitimately drawn from those data, are of the kind just described, and that there is so far no fundamental difference in character between psychology and such sciences as physics and chemistry. An objection might indeed be taken to this assertion on the following ground. Your description, it might be said, applies well enough to the course of our sense-percepts and the succession of our memory-images. They are, as you say, asserted to exist on the strength of our immediate and unanalyzed awareness of a given presentation, or rather a given presented *object*. Only these percepts and images are not, strictly speaking, *psychical* facts or facts of *consciousness* at all. They are all extra-mental objects in the only sense in which the term extra-mental has a definite meaning. That is to say, percepts and images are not *in* the mind at all, in the sense in which the terms of a series are *in* the series; they are not the elements of which the thing we call 'mind' or 'consciousness' is the total complex. (And hence, by the way, arises a possible doubt whether there can in strictness be *any* psychology of perception or thought.) But when you come to genuinely psychical facts, such as emotion, desire, volition, pleasure-pain, you are not dealing with extra-mental presented objects at all, but with processes which are the actual constituents of the complex I call my 'mind' or 'consciousness.' Can it, then, be said that I assert the existence of these processes on the testimony of an unanalyzed apprehension? Is not this to fall into the psychological fallacy of an extreme presentationalism? This objection has, I think, no real weight. What distinguishes experiences like those of pain or delight from experiences like those of red or sweet is surely not

that the former have *no* object, but that their object is itself an attitude of the percipient's mind. It is I who am pained or delighted, though it is not necessarily I who am red or sweet.

Psychology, it is true, can and does make use of assumed hypothetical elements which are not themselves legitimately regarded as data of actual personal experience. It does this notably when it assumes the existence of pure simple sensations, of subliminal and subconscious mental states, or of psychical 'dispositions' generally, as congenital mental raw material. But I do not see that in this, or in the still more liberal use of hypothetical elements characteristic of a psychology of the associationist type, psychology acts otherwise than such sciences as chemistry or physics. In both these studies the task of inferring the actual course of a continuous process from observations of isolated data is simplified by the assumption, for purposes of calculation, of simple hypothetical elements which cannot be actually exhibited in experience and may conceivably be mere methodological creations of theory. And the typical form of abstraction employed in this process seems, so far as I can see, to be the same in all three cases. It depends upon the assumption that minor individual differences between one electron, one chemical atom, one mind and another are negligible. Just as we treat, *e. g.*, all atoms of the same element as identical, at least within the range of our observations, in respect of their weight or chemical affinities, so we treat different minds as alike in respect of the ways in which they react upon typical modifications in their environment. Our generalizations are in each case obtained by the statistical assumption that individual divergences from a standard type, if they actually exist, will be too small to make an appreciable difference to the result. The only serious difference between psychology and the physical sciences, so far as I see, lies in the higher confidence with which we can infer that an actual physical process will be found to conform to the general typical law to which our hypothesis conducts us. Whether this is due to actual higher complexity in the structure of human mind as compared with that of the real elements of the physical order, or is merely a human illusion arising from the fact that we

are better acquainted with individual minds than with the individualities of the physical world I need not try to decide here.

It might perhaps be held that psychology is radically distinguished from the physical sciences by the fact that while they deal with objects equally perceptible to a plurality of subjects, psychology is exclusively concerned with what Professor Münsterberg calls *individuelle Objekte*, objects cognizable only in a unique act and by a single subject. But is the fact of this difference quite certain? If we are to hold rigorously to the distinction, must we not at least lay it down that there is really no such thing as the psychology of cognition, since the immediate *objects* of cognition (sense-qualities, physical things, memory-images, universal concepts) are all *überindividuelle Objekte*, while, as to the unique *processes* by means of which the individuals cognize these objects, it may at least be doubted whether careful introspection reveals certain evidence of their existence; *i. e.*, it may be that what we now call the psychology of cognition is a mere temporary stepping-stone to the cerebral physiology, on the one side, and the logic, on the other, of a more scientific future. In any case, the logical character of a science must be determined, not by the character of the assumed simple objects it cognizes, but by the nature of its methodological postulates. Judged from this point of view, psychology seems to make the same sort of use as the physical sciences of the leading concepts of mechanical science, viz., the formation of complex wholes by the combination of simple elements and the law of uniform sequence. It is true that its 'laws' have as yet hardly begun to be expressible in exact numerical form, and hence the 'non-quantitative' nature of the science is frequently regarded as constituting a radical difference in kind between psychology and the physical sciences. But I must own to being dissatisfied with the reasons which are commonly adduced for regarding this as more than a temporary defect caused by the comparatively inchoate condition of the subject. I see in principle no difficulty in the determinate correlation of psychical functions with numerical values. Moreover, in the *duration* of mental process we clearly seem to have an obvious instance of a psychical function susceptible of numerical determination. And, again,

such researches as those of Ebbinghaus and others on memory and obliviscence seem to present us with the first beginnings of a truly mathematical treatment of psychical processes.

What does, as I conceive, absolutely distinguish psychology from the philosophical sciences is the kind of use which the latter make of transcendental noumenal ideals into which no element of empirical fact, — no time-variable, — appears to enter. The abstract philosophical sciences, logic and the pure mathematics, appear to be throughout concerned with relations between such noumenal ideals, and it is to these sciences a matter of pure indifference whether or not these ideals are even approximately imitated by the sensible objects of temporal experience. In other words, the only objects of which the existence is presupposed by these sciences are the suprasensible entities or noumena, in the proper sense, of exact logic. In so far as use is made of sensible arrangements, diagrams, or models, except as mere incidental sources of suggestion and aids to imagination, I suppose we may safely say we are dealing with bad logic and bad mathematics.

The concrete philosophical sciences, indeed, — the so-called *Geisteswissenschaften*, — have in a way to consider temporal facts of biography and of history, and thus include empirical existence-theorems among their assertions. But they do not consider them, like the natural sciences, for the purpose of inferring further empirical existence-theorems, but in order to pass judgment on the intellectual, moral, and æsthetic worth of the objects in question in the light of transcendental ideal standards of value. In a much wider than the vulgar moralistic sense of the phrase, not only ethics and æsthetics, but logic and formal mathematics, deal with what 'ought' to be, but is not revealed by perception as ever actually existing at any given moment. There is, to be sure, an inveterate prejudice in modern, or at least in post-Hegelian, philosophy according to which only what has the guarantee of immediate unanalyzed perception really 'is,' and the ideals of the philosophical sciences are merely subjective 'ideas.' I must confess to an ineradicable bias in favor of the opposing Platonic conviction that it is precisely that which conforms to the ideal standard of what has the right to be which really, and, in the true sense of the word,

'is,' and that the discrepancies between the revelations of immediate perception and the demands of the ideal will be found on examination to be due to the fact that the vision of direct perception at any moment is at once limited by imperfection of organs and narrowness of attention-span, and distorted by all sorts of unconscious and untested metaphysical assumptions. Judged by the Platonic standard, we should have to say, the dependency of psychology upon empirical existence-theorems of itself deprives it of truth as a knowledge of human nature, when contrasted with biography or history and their revelations of the capacities and aspirations of the human spirit. It is not in the reactions of the laboratory, but in appreciation by an ideal standard of the ends to which human life can be devoted that we most truly learn what the mind of man *is*. "La vraie science de l'esprit n'est pas la psychologie mais la métaphysique."

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